In the Claims

Please amend the following claims as indicated:

Claim 1 (Original) An arch support orthosis having an arch curve being adjustably tensioned during use, said arch support brace being fittable proximately under a foot and being sized and shaped to be removably placed within a foot support enclosure worn by a user, comprising:

an arch support orthosis being sized for support of the foot from underneath about the metatarsal bones of the foot, to underneath about the calcaneus bone of the foot, said orthosis having a first surface being contoured for support of the foot, having a second surface being downwardly faced for contact with the foot supporting surface of the shoe, and having a medial side and an outer lateral side on opposed sides of a central longitudinal midline of said orthosis;

a forefoot portion of said first surface being arcuately shaped to be positionable underneath the metatarsal bones of the foot;

a heel portion of said first surface being arcuately shaped to be positionable underneath the calcaneus bone of the foot;

a medial longitudinal arch curve proximate said medial side of said orthosis, said medial longitudinal arch curve being shaped to be positionable underneath the arch of the foot, said medial longitudinal arch curve having an upper surface being curved upwardly along a crown portion, said medial side being disposed in a continuous arched curve along a length dimension of said medial side of said orthosis, said medial longitudinal arch curve including:

an anterior slope being inclined from said upper surface of said medial longitudinal arch curve toward said forefoot portion of said orthosis;

a posterior slope being inclined from said upper surface of said medial longitudinal arch curve toward said heel portion of said orthosis;

a medial slope being inclined from said upper surface of said medial longitudinal arch curve toward said lateral side of said orthosis; and

a means for tensioning said medial longitudinal arch curve connectable between an underside portion of said anterior slope and an underside portion of said posterior slope, said means for tensioning having a means for adjusting manipulated by a user for adjustment of said means for tensioning between a neutral length, a decreased length, and an extended length between said anterior slope and said posterior slope,

whereby when the neutral length of said means for tensioning is reduced to the decreased length by the user adjustment of said means for adjusting, the tension along said medial longitudinal arch curve is increased thereby the stiffness of said arch curve increases from when said means for tensioning is at the neutral length, and each slope of said anterior slope and said posterior slope is increased, and when the neutral length of said means for tensioning is increased to the extended length by the user adjustment of said means for adjusting, the tension along said medial longitudinal arch curve is decreased, and each slope of said anterior slope and said posterior slope is decreased.

Claim 2 (Original) The arch support orthosis of Claim 1 wherein said means for tensioning including:

an anterior bracket being L-shaped, said anterior bracket having a distal portion being connected under said anterior slope proximal to said medial side, said anterior bracket having a proximal portion extended downwardly from said anterior slope;

a posterior bracket being L-shaped, said posterior bracket having a distal portion being

connected under said posterior slope proximal to said medial side, said posterior bracket having a proximal portion extended downwardly from said posterior slope;

an anterior linkage aligned with said anterior bracket, said anterior linkage having a distal end pivotably connected with said proximal portion of said anterior bracket, said anterior linkage having a proximal end disposed underneath said crown portion of said medial longitudinal arch curve;

a posterior linkage aligned with said posterior bracket, said posterior linkage having a distal end pivotably connected with said proximal portion of said posterior bracket, said posterior linkage having a proximal end disposed underneath said crown portion of said medial longitudinal arch curve; and

said means for adjusting the neutral length between said distal end of said anterior linkage and said distal end of said posterior linkage, said means for adjusting having opposed ends being disposed to accept therein respectively said proximal ends of said anterior linkage and said proximal linkage, said means for adjusting being manipulated by the user;

whereby said anterior linkage and said posterior linkage are retracted into respective opposed ends of said means for adjusting by manipulation of said means for adjusting, the length between said respective distal ends is shortened, each of said anterior and posterior linkages engage said each respective proximal portions of said anterior bracket and said posterior bracket, thereby each respective anterior and posterior brackets pivot respectively inwardly, thereby pulling said underside of said anterior slope and said posterior slope toward each other and increasing the tension along said medial longitudinal arch curve;

whereby when each of said anterior linkage and said posterior linkage is extended from said means for adjusting by manipulation of said means for adjusting, the length between said respective distal ends is lengthened, thereby each distal end extends against said respective

proximal portions of said anterior bracket and said posterior bracket which pivot against the underside of said anterior slope and said posterior slope, thereby pushing said underside of said anterior slope and said posterior slope apart and reducing the tension of said medial longitudinal arch curve.

Claim 3 (Original) The arch support orthosis of Claim 1 further comprising said anterior slope having an anterior base of a first thickness, said posterior slope having a posterior base of a second thickness, said crown of said medial slope having a third thickness along said upper surface of said medial longitudinal arch curve, whereby said anterior base and said posterior base providing rigidity for said medial longitudinal arch curve for repetitive adjusting of said means for tensioning without failure during use by heavily weighted users.

Claim 4 (Currently Amended) The arch support orthosis of Claim ~~1~~ 2 wherein said means for adjusting being repeatably manipulated by the user for repetitive extension and retraction of said anterior linkage and said posterior linkage.

Claim 5 (Currently Amended) The arch support orthosis of Claim ~~1~~ 2 wherein said means for adjusting including a rotatable adjusting means having a sleeve nut, a worm gear, or a turnbuckle.

Claim 6 (Currently Amended) The arch support orthosis of Claim 1 wherein said means

for tensioning including:

~~said~~ an anterior bracket having a distal portion being connected under said anterior slope proximal to said medial side, said anterior bracket having a proximal portion extended ~~downwardly~~ posteriorly from said anterior slope;

~~said~~ a posterior bracket having a distal portion being connected under said posterior slope proximal to said medial side, said posterior bracket having a proximal portion extended ~~downwardly~~ anteriorly from said posterior slope;

an anterior means for adjusting connectable at an anterior swivel joint to said anterior bracket, and

a posterior means for adjusting connectable at a posterior swivel joint to said posterior bracket, said anterior adjusting means and said posterior adjusting means having a length of cable connectable therebetween, said length of cable having at least one swivel portion along said length of cable, each of said anterior means for adjusting and said posterior means for adjusting being rotatably manipulated by the user to retract or extend the length of cable between each respective means for adjusting;

whereby when either of said anterior means for adjusting and said posterior means for adjusting is rotatably manipulated, the length of cable is adjustable in length, with resultant increase in tension and angles of said anterior slope and said posterior slope when said length of cable is reduced in length, and with resultant decrease in tension and angles of said anterior slope and said posterior slope when said length of cable is increased in length between said anterior bracket and said posterior bracket connected under said medial longitudinal arch curve.

Claim 7 (Currently Amended) The arch support orthosis of Claim 1 wherein said means

for tensioning including:

~~said~~ an anterior bracket having a distal portion being connected under said anterior slope proximal to said medial side, said anterior bracket having a proximal portion extended ~~downwardly~~ posteriorly from said anterior slope;

~~said~~ a posterior bracket having a distal portion being connected under said posterior slope proximal to said medial side, said posterior bracket having a proximal portion extended ~~downwardly~~ anteriorly from said posterior slope; and

two straps of non-extendable web materials; each of said straps having a distal end attached to said respective anterior bracket and posterior bracket, each of said straps having a proximal end connectable together by a means for adjusting positioned under said medial longitudinal arch curve.

8. (Original) The arch support orthosis of Claim 7 wherein said means for tensioning further including said means for adjusting being manipulated by the user for adjustment of the length between said anterior bracket and said posterior bracket.

9. (Original) The arch support orthosis of Claim 8 wherein said means for adjusting including a worm gear, a buckle, or a clamp.

10. (Original) A foot support orthosis including an arch support brace having an arch curve being variably tensioned during use, the foot support orthosis being fittable underneath the foot

and being sized and shaped to be removably placed proximal a foot supporting surface of a foot enclosure worn by a user, comprising:

an orthosis being sized for support of the foot from underneath about the metatarsal bones of the foot, to underneath about the calcaneus bone of the foot, said orthosis having a first surface being contoured for support of the foot, having a second surface being downwardly faced for contact with the foot supporting surface of the shoe, and having a medial side and a lateral side on opposed sides of a central longitudinal midline of said orthosis;

a forefoot portion of said first surface being arcuately shaped to be positionable underneath the metatarsal bones of the foot;

a heel portion of said first surface being arcuately shaped to be positionable underneath the calcaneus bone of the foot;

a medial longitudinal arch curve proximate said medial side of said orthosis, said medial longitudinal arch curve being shaped to be positionable underneath the arch of the foot, said medial longitudinal arch curve having an upper surface being curved upwardly along a crown portion, said medial longitudinal arch curve including:

an anterior slope being inclined from said upper surface of said medial longitudinal arch curve toward said forefoot portion of said orthosis;

a posterior slope being inclined from said upper surface of said medial longitudinal arch curve toward said heel portion of said orthosis; and

a medial slope being inclined from said upper surface of said medial longitudinal arch curve toward said lateral side of said orthosis; and

said anterior slope having an anterior base of a first thickness, said posterior slope having a posterior base of a second thickness, said crown of said medial slope having a third thickness along said upper surface of said medial longitudinal arch curve, said medial side of said medial

longitudinal arch curve being disposed in a continuous arched curve along a length dimension of said medial side;

whereby said medial longitudinal arch curve having said anterior base, said crown portion, and said posterior base being tensioned during each foot-strike by force being transferred by the foot of the user from said heel portion and onto said medial longitudinal arch curve of said orthosis, thereby increasing the tension along said medial longitudinal arch curve without significantly decreasing the height of the arch curve, with said crown portion of said medial longitudinal arch curve flexibly rebounded to an unweighted position by force being transferred by the foot of the user from said medial longitudinal arch curve and onto said forefoot portion of said orthosis during each foot-strike by the user while wearing said orthosis.

B1

11. (Original) The foot support orthosis of Claim 10 further comprising a means for tensioning connectable underneath said arch curve, said means for tensioning including:

an anterior bracket being L-shaped, said anterior bracket having a distal portion being connected under said anterior slope proximal to said medial side, said anterior bracket having a proximal portion extended downwardly from said anterior slope;

a posterior bracket being L-shaped, said posterior bracket having a distal portion being connected under said posterior slope proximal to said medial side, said posterior bracket having a proximal portion extended downwardly from said posterior slope;

an anterior linkage aligned with said anterior bracket, said anterior linkage having a distal end pivotably connected with said proximal portion of said anterior bracket, said anterior linkage having a proximal end disposed underneath said crown portion of said medial longitudinal arch curve;

a posterior linkage aligned with said posterior bracket, said posterior linkage having a distal end pivotably connected with said proximal portion of said posterior bracket, said posterior linkage having a proximal end disposed underneath said crown portion of said medial longitudinal arch curve; and

a means for adjusting the neutral length between said distal end of said anterior linkage and said distal end of said posterior linkage, said means for adjusting having opposed ends being disposed to accept therein respectively said proximal ends of said anterior linkage and said proximal linkage, said means for adjusting being manipulated by the user;

whereby said anterior linkage and said posterior linkage are retracted into respective opposed ends of said means for adjusting, the length between said respective distal ends is shortened, each of said anterior and posterior linkages engage said each respective proximal portions of said anterior bracket and said posterior bracket, thereby each respective anterior and posterior brackets pivot respectively inwardly, thereby pulling said underside of said anterior slope and said posterior slope toward each other and increasing the tension along said medial longitudinal arch curve;

whereby when each of said anterior linkage and said posterior linkage is extended from said means for tensioning by manipulation of said means for adjusting, the length between said respective distal ends is lengthened, thereby each distal end extends against said respective proximal portions of said anterior bracket and said posterior bracket which pivot against the underside of said anterior slope and said posterior slope, thereby pushing said underside of said anterior slope and said posterior slope apart and reducing the tension of said medial longitudinal arch curve.

12. (Original) The foot support orthosis of Claim 10 further comprising a means for tensioning connectable underneath said arch curve, said means for tensioning including: an anterior bracket connectable to said anterior base, said anterior bracket having a distal portion being connected under said anterior base proximal to said medial side, said anterior bracket having a proximal portion extended toward said posterior base;

a posterior bracket connectable to said posterior base, said posterior bracket having a distal portion being connected under said posterior base proximal to said medial side, said posterior bracket having a proximal portion extended toward said anterior base;

an anterior linkage aligned with said anterior bracket, said anterior linkage having a distal end pivotably connected with said proximal portion of said anterior bracket, said anterior linkage having a proximal end disposed underneath said crown portion of said medial longitudinal arch curve;

a posterior linkage aligned with said posterior bracket, said posterior linkage having a distal end pivotably connected with said proximal portion of said posterior bracket, said posterior linkage having a proximal end disposed underneath said crown portion of said medial longitudinal arch curve; and

a means for adjusting the neutral length between said distal end of said anterior linkage and said distal end of said posterior linkage, said means for adjusting having opposed rod ends being disposed to connect in an anterior swiveling connection to said proximal end of said anterior linkage and in a posterior swiveling connection to said proximal end of said proximal linkage, said means for adjusting being manipulated by the user to retract or extend each of said opposed rod ends;

whereby when said opposed rod ends are retracted into respective opposed ends of said means for adjusting, the length is shortened between said respective distal ends of said anterior

and posterior linkages, each of said anterior and posterior linkages engage said respective proximal portions of said anterior and posterior brackets, thereby each respective anterior and posterior brackets retract respectively toward said means for adjusting, thereby pulling said underside of said anterior base and said posterior base toward each other and increasing the tension along said medial longitudinal arch curve;

whereby when said opposed rod ends are extended into respective opposed ends of said means for adjusting, the length is lengthened between said respective distal ends of said anterior and posterior linkages, each of said anterior and posterior linkages engage said respective proximal portions of said anterior and posterior brackets, thereby each respective anterior and posterior brackets retract respectively away from said means for adjusting, thereby pushing said underside of said anterior base and said posterior base away from each other and reducing the tension of said medial longitudinal arch curve.

13. (Original) A foot support orthosis including an arch curve being variably tensioned during use, the foot support orthosis being fittable underneath the foot and being sized and shaped to be removably placed proximal a foot supporting surface of a foot enclosure worn by a user, comprising:

an orthosis being sized for support of the foot from underneath about the metatarsal bones of the foot, to underneath about the calcaneus bone of the foot, said orthosis having a first surface being contoured for support of the foot, having a second surface being downwardly faced for contact with the foot supporting surface of the shoe, and having a medial side and an outer lateral side on opposed sides of a central lengthwise midline of said orthosis;

a forefoot portion of said first surface of said orthosis being arcuately shaped to be

positionable underneath the metatarsal bones of the foot;

a heel portion of said first surface of said orthosis being arcuately shaped to be positionable underneath the calcaneus bone of the foot;

a medial longitudinal arch curve having an upper surface being curved upwardly along a crown portion, said medial longitudinal arch curve including:

an anterior slope being inclined from said upper surface of said medial longitudinal arch curve toward said forefoot portion of said orthosis;

a posterior slope being inclined from said upper surface of said medial longitudinal arch curve toward said heel portion of said orthosis; and

B1

a medial slope being inclined from said crown portion of said upper surface of said medial longitudinal arch curve toward said lateral side of said orthosis; and

said anterior slope having an anterior base of a first thickness, said posterior slope having a posterior base of a second thickness, said crown of said medial slope having a third thickness along said upper surface of said medial longitudinal arch curve, said medial side of said medial longitudinal arch curve being disposed in an arched curve along a length dimension of said medial side;

whereby said medial longitudinal arch curve having said anterior base, said crown portion, and said posterior base being tensioned during each foot-strike by force being transferred by the foot of the user from said heel portion and onto said medial longitudinal arch curve of said orthosis, thereby increasing the tension along said medial longitudinal arch curve without significantly decreasing the height of the arch curve, with said crown portion of said

medial longitudinal arch curve flexibly rebounded to an unweighted position by force being transferred by the foot of the user from said medial longitudinal arch curve and onto said forefoot portion of said orthosis during each foot-strike by the user while wearing said orthosis; and

a means for tensioning said medial longitudinal arch curve connectable between an underside portion of said anterior slope and an underside portion of said posterior slope, said means for tensioning having a means for adjusting being manipulated by a user for adjustment of a length of said means for tensioning between a neutral length, a decreased length, and an extended length between said anterior slope and said posterior slope,

whereby when the neutral length of said means for tensioning is reduced to the decreased length by the user adjustment of said means for adjusting, the tension along said medial longitudinal arch curve is increased thereby the stiffness of said arch curve increases from when said means for tensioning is at the neutral length, and each slope of said anterior slope and said posterior slope is increased, and when the neutral length of said means for tensioning is increased to the extended length by the user adjustment of said means for adjusting, the tension along said medial longitudinal arch curve is decreased, and each slope of said anterior slope and said posterior slope is decreased.

14. (Original) The foot support orthosis of Claim 13 wherein said first thickness of said anterior base of said anterior slope is substantially equal to said second thickness of said posterior base of said posterior slope, said third thickness of said medial slope and said crown being less than the first and second thickness.

15. (Original) The foot support orthosis of Claim 13 wherein said first thickness of said anterior base of said anterior slope is less than said second thickness of said posterior base of said posterior slope, and said third thickness of said medial slope and said crown being less than the first and second thickness.

16. (Original) The foot support orthosis of Claim 13 wherein said means for tensioning including:

an anterior bracket being L-shaped, said anterior bracket having a distal portion being connected under said anterior slope proximal to said medial side, said anterior bracket having a proximal portion extended downwardly from said anterior slope;

a posterior bracket being L-shaped, said posterior bracket having a distal portion being connected under said posterior slope proximal to said medial side, said posterior bracket having a proximal portion extended downwardly from said posterior slope;

an anterior linkage aligned with said anterior bracket, said anterior linkage having a distal end pivotably connected with said proximal portion of said anterior bracket, said anterior linkage having a proximal end disposed underneath said crown portion of said medial longitudinal arch curve;

a posterior linkage aligned with said posterior bracket, said posterior linkage having a distal end pivotably connected with said proximal portion of said posterior bracket, said posterior linkage having a proximal end disposed underneath said crown portion of said medial longitudinal arch curve; and

said means for adjusting the neutral length between said distal end of said anterior linkage and said distal end of said posterior linkage, said means for adjusting having opposed

ends being disposed to accept therein respectively said proximal ends of said anterior linkage and said proximal linkage, said means for adjusting being manipulated by the user;

whereby said anterior linkage and said posterior linkage are retracted into respective opposed ends of said means for adjusting, the length between said respective distal ends is shortened, each of said anterior and posterior linkages engage said each respective proximal portions of said anterior bracket and said posterior bracket, thereby each respective anterior and posterior brackets pivot respectively inwardly, thereby pulling said underside of said anterior slope and said posterior slope toward each other and increasing the tension along said medial longitudinal arch curve; and

whereby when each of said anterior linkage and said posterior linkage is extended from said means for tensioning by manipulation of said means for adjusting, the length between said respective distal ends is lengthened, thereby each distal end extends against said respective proximal portions of said anterior bracket and said posterior bracket which pivot against the underside of said anterior slope and said posterior slope, thereby pushing said underside of said anterior slope and said posterior slope apart and reducing the tension of said medial longitudinal arch curve.

17. (Original) The foot support orthosis of Claim 13 wherein said means for tensioning including:

an anterior bracket connectable to said anterior base, said anterior bracket having a distal portion being connected under said anterior base proximal to said medial side, said anterior bracket having a proximal portion extended toward said posterior base;

a posterior bracket connectable to said posterior base, said posterior bracket having a

distal portion being connected under said posterior base proximal to said medial side, said posterior bracket having a proximal portion extended toward said anterior base;

an anterior linkage aligned with said anterior bracket, said anterior linkage having a distal end pivotably connected with said proximal portion of said anterior bracket, said anterior linkage having a proximal end disposed underneath said crown portion of said medial longitudinal arch curve;

a posterior linkage aligned with said posterior bracket, said posterior linkage having a distal end pivotably connected with said proximal portion of said posterior bracket, said posterior linkage having a proximal end disposed underneath said crown portion of said medial longitudinal arch curve; and

B1

said means for adjusting the neutral length between said distal end of said anterior linkage and said distal end of said posterior linkage, said means for adjusting having opposed rod ends being disposed to connect in an anterior swiveling connection to said proximal end of said anterior linkage and in a posterior swiveling connection to said proximal end of said proximal linkage, said means for adjusting being manipulated by the user to retract or extend each of said opposed rod ends;

whereby when said opposed rod ends are retracted into respective opposed ends of said means for adjusting, the length is shortened between said respective distal ends of said anterior and posterior linkages, each of said anterior and posterior linkages engage said respective proximal portions of said anterior and posterior brackets, thereby each respective anterior and posterior brackets retract respectively toward said means for adjusting, thereby pulling said underside of said anterior base and said posterior base toward each other and increasing the tension along said medial longitudinal arch curve;

whereby when said opposed rod ends are extended into respective opposed ends of said

means for adjusting, the length is lengthened between said respective distal ends of said anterior and posterior linkages, each of said anterior and posterior linkages engage said respective proximal portions of said anterior and posterior brackets, thereby each respective anterior and posterior brackets retract respectively away from said means for adjusting, thereby pushing said underside of said anterior base and said posterior base away from each other and reducing the tension of said medial longitudinal arch curve.

18. (Withdrawn)

19. (Withdrawn)

Summary

It is respectfully requested that the above identified Election, with right of traverse, be accepted for examination purposes by the Examiner. Further, it is respectfully requested that the above identified preliminary amendments to the claims be entered into the pending Application.

Please contact the undersigned with any questions regarding this response in order to expedite prosecution of the pending Application.

Respectfully submitted,

Jack Kenneth Greer, Jr.

Jack Kenneth Greer, Jr.
Registration No. 42,605
Dated: June 25, 2003

Jack K. Greer, Jr.
116 Heritage Drive
Oak Ridge, TN 37830

Monday - Friday
8:30 am - 5:30 pm (EST)
(865) 584-0105